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ABSTRACT

This study reviews changes brought about by advances in computer and telecommunications technology and describes online searching of sociological databases. Social changes affected by electronic technology are discussed, and speculations are made concerning the future effects of this technology. Also discussed are changes induced by recent innovations in the information transfer process and social and technological changes as they alter the library's role in the dissemination of information and in the process of education. Emphasis is placed on the advantages of online searching, particularly searching of "Sociological Abstracts." Appendices present a list of searchable fields for this database as mounted on the DIALOG information retrieval system; sample searches on the psycho-social impact of automation on library personnel and the social impact of information technology; and a list of 14 databases containing information of relevance to sociology. A 102-item bibliography on library automation and information technology is also provided. (ESR)

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ELECTRONIC TECHNOLOGY, AUTOMATION AND LIBRARIES:

A State-Of-The-Art-Review

by

Katalin Harkanyi

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Electronic Technology, Automation and Libraries:
A State-of-the-Art Review

The Future

A phenomenon is taking place in our society today. It has been intensifying and manifesting itself for the last twenty years or so; but in the late 1970's and early 1980's, it has asserted itself and is showing promise of great changes in people's lives in the coming decades. It has already influenced manufacturing, banking, transportation, and the information transfer processes. The phenomenon is electronic technology.

As tedious work is assigned to machines, people become freer to pursue their individual interests. By doing work at home and soon conducting some jobs at home, people will gain more spare time. It is quite reasonable to assume that society in the future will have less work, shorter working hours, more leisure time, and less centralization. The development of application to practical problems will de-emphasize research. These changes will be relatively swift, and people will need assistance in making the necessary adjustments. Librarians too will be **obligated** to respond to this need and to accept their share in the re-education of society.

Computers have already established their role in the process of providing library service. Today, personal computers are becoming more and more popular; combined with cable TV and the telephone, they will become interactive and thus a powerful force in society. Their use will be limitless.

In the near future, home computers will have access to personal and office files, local library materials and bibliographic databases; they will receive facsimile transmissions, and they will conduct such transactions as banking and shopping. Consequently libraries also will have to provide some of their services online. Computers are expensive and services online are still costly. It is probable that the computer will not be accessible for a long time to all segments of population. Therefore, libraries will not only have to provide software but hardware as well. Will or can these institutions assume the expenses involved? Will access to information be free as in the past or only for the privileged few who can pay for it? The very essence of library service philosophy will be in question and will come under serious study.

In addition to computer utility, telecommunication is also capturing an important role in information transfer. Cable TV has a tremendous potential in teaching, networking and two-way communication; satellites are being tested and improved for transmitting and receiving information and for teleconferencing; for example: The Wall Street Journal is printed by satellite communication in remote areas of the World. Furthermore video technology is being perfected and is the up-coming medium in information technology. Of the various formats, videodiscs seem to be the best-suited for storing printed material; it is possible to fit approximately fifty thousand items on one side, and any one frame can be selected at a time in about five seconds.

Knowing all of this, it is not difficult to comprehend that electronic technology has the potential for changing people's personal and professional lives, for enhancing the quality of life, and for effectively transferring information.

The Present

That will be the future. But how much are libraries involved presently in attaining the electronic information environment? To what extent have libraries been automated to this date?

Too many variables make library automation difficult. The major areas that have been automated are operations (acquisition, cataloging, circulation) and bibliographic information retrieval.

The fast growing and immensely bulky card catalog suddenly became difficult to use and expensive to maintain. Visionary action was needed to make the catalog efficient, useful, and cost-effective again. The Library of Congress, though not voluntarily but out of necessity, accepted leadership in finding a solution to the problem. As a result, the MARC (machine readable card) record was developed in the 1960's, and the way was opened for the online catalog. The strength and appeal of the MARC record is that it consists of searchable fields such as language, date, place of publication, author, title, subject, etc. Computer application of these records transforms the already valuable card catalog into a highly accurate index to library collections. The online card catalog is still in the experimental phase, and relatively few libraries can utilize it yet. A prototype online catalog, called Melvyl, is being tested in the University of California system. Other catalogs exist at Ohio State University, University of Toronto, and Ryerson Polytechnical Institute. User surveys indicate that online catalogs are preferred to the conventional ones. They were rated for clarity, comprehensiveness, responsiveness, versatility, and reliability. The only criticisms were lack of subject access and need for better instructional programs in handling the system.

In most cases, individual libraries can not afford to design their own online catalog, and the solution maybe shared cataloging. A system of shared online cataloging was pioneered in the 1960's by the Ohio College Libraries referred to as OCLC. As institutions entered their cataloged material into the database, others were able to utilize those records. Soon the economic and professional advantages of this system surfaced and other networks (the Research Library Group, the Washington Library Network) were also developed. Standards and authority files were created to ensure perfect recall for each search. OCLC is the largest with 3,200 member libraries (academic, research, public, corporate, and school) from 22 states and encompassing over 8 million records. Approximately 4,500 terminals interact in the system through an extensive telecommunications network. Unfortunately, in contrast with the Washington Library Network, this database does not have subject searching capabilities at this time.

Since each record in these databases lists holding libraries, the networks very soon became the basis for interlibrary loan transactions. The prospects for automated acquisition and circulation systems were also recognized and designed.

The effective transfer of information is just as important in reference services. Swift verification of material is possible with the shared cataloging systems; names of authors (personal or corporate) can be accurately established; and recently-cataloged material not yet included in the card catalog can be immediately located.

One of the most promising products of information technology, but still in the experimental stage, is the transmission of entire texts. In 1980 the Academic American Encyclopedia became available online. While still in the testing stage, the encyclopedia was heavily used.

The applications of this achievement are limitless. Faculty and academic librarians will equally hail prompt and up-to-date journal article delivery online.

The Search

Even though indexes and abstracts have improved the research process, with the advent of the information explosion, they have become less efficient than before. The availability of these research tools online has improved scholarly investigation tremendously. Since more access points exist to the databases, and Boolean logic is used in searching, some formerly inaccessible material has come to light, and the relevancy of the retrieved citations has increased. Information can be found speedily, and because the search is time-efficient, this process has proven to be cheaper than the manual search. Material retrieved is up-to-date since online indexes are ready sooner than the printed ones. Unfortunately, this service is not free at this date; indexing practices differ with each database; and multi-database searching can be very complex due to the lack of standardized thesauri.

Presently about 500 databases (bibliographic and factual) are offered online by a handful of vendors: ORBIT, LOCKHEED, HRS, and Medlines. Bibliographic files are more prevalent in the fields of the hard sciences, while the factual ones flourish mostly in the social sciences and humanities. For example, Westlaw and LEXIS are full text legal databases online as are the New York Times and the 1980 Census.

Sociological Abstracts and the Social Science Citation Index provide the most useful research materials to the sociologist. However, given the interdisciplinary nature of this profession, a number of other databases are also useful sources for research (see Appendix III, p. 13). Interestingly enough, at times seemingly completely unrelated databases contain much valuable material to sociologists. For instance, AGRICOLA, an agricultural file produced by the U.S. Department of

Agriculture, includes social sciences among its fifteen various categories. Subfile "M" of category 12 is dedicated to sociology and covers emigration, social control, social mobility, women, and youth. Emphasis of course is on rural sociology.

Online Sociological Abstracts corresponds to the printed one with only a few differences, e.g., conference papers for 1973-1976 are included only in the printed form. World literature in sociology and related material in social and behavioral sciences is indexed. Over 1,500 journals published mostly by sociological organizations are regularly scanned. Some of the other journals are related to anthropology, economics, education, medicine, community development, political science, and some even to the humanities. In addition to journals, serial publications, reviews, discussions, monographs (before 1973), conference papers, panel discussions, and case studies are regularly reviewed for inclusion.

In addition to traditional topics, Sociological Abstracts offers material on women studies, environmental impact, sociology of religion, radical sociology and other topics. American spelling is preferred to British in indexing practices; authors' names are taken exactly from the source and their affiliations are also noted. The database has a core subject file consisting of terms used more than five times. This core subject file includes more than 5,000 descriptors. (See appendices for "Search Options," "Sample Search," and "Computer Searchable Files.")

Conclusion

The situation seems to be clear and already defined. Libraries, their functions, philosophy, purpose and operations are challenged by technology and the new society that is being shaped by the electronic explosion.

Today the library is a storehouse of information; librarians interpret and analyze printed material and teach patrons how to use resources. Tomorrow these institutions and their managers will also supply the information via cable TV, telephone, and computers. Printed material will supplement telecommunications. In the future, librarians will teach the use of the electronic information environment, make community, regional, national and world-wide teleconferencing possible, and provide access to community information. In any case, electronic technology and automation are bringing and will bring added responsibilities to libraries and librarians.

Appendix I: Search Options

The search options available are:

1. Basic index (comprised of abstracts, corporate sources, titles, descriptors, notes, and titles)
2. Abstract
3. Corporate source (author's affiliation)
4. Descriptor (controlled vocabulary subject headings)
5. Identifier (natural language phrases)
6. Note (additional information about the document)
7. Title
8. Author
9. Coden
10. Document type
11. Journal name
12. Language
13. Meeting series
14. Publication year
15. Section code
16. Update

The "limit" command is not available in this database. Citations may be typed online or printed offline in a number of formats:

1. Format 1: DIALOG accession number or actual abstract number
2. Format 2: full record minus the abstract
3. Format 3: bibliographic citation
4. Format 4: abstract and title
5. Format 5: full record
6. Format 6: title and accession number
7. Format 7: bibliographic citation and abstract
8. Format 8: title and indexing terms

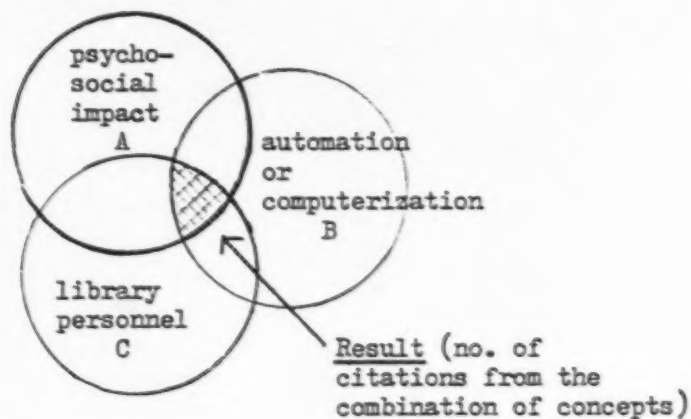
Appendix II: Sample Search

To demonstrate an actual search, the following topics were chosen:

Problem 1: Psycho-social impact of automation on library personnel

Logic: 1. concepts: a. psycho-social impact
b. automation
c. library personnel

2. Venn-diagram:



Strategy:

? SS (PSYCHO(W)SOCIAL(F)IMPACT OR PSYCHOSOCIAL(F)IMPACT)

1 2 PSYCHO(W)SOCIAL(F)IMPACT
2 17 PSYCHOSOCIAL(F)IMPACT
3 19 1 OR 2

A = 19

? SS AUTOMATION OR COMPUTERIZATION

4 253 AUTOMATION
5 18 COMPUTERIZATION
6 269 4 OR 5

B = 269

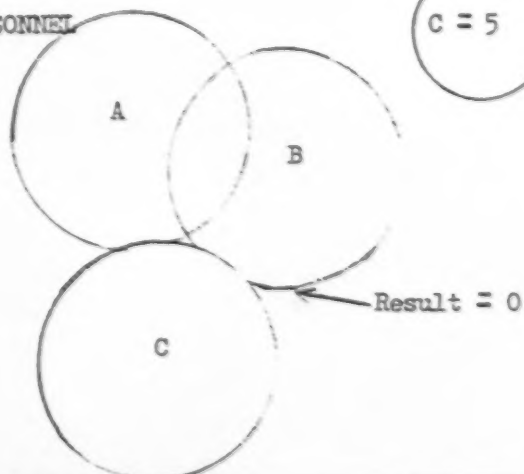
? S LIBRARY(F)PERSONNEL

7 5 LIBRARY(F)PERSONNEL

C = 5

? C 3AND6AND7

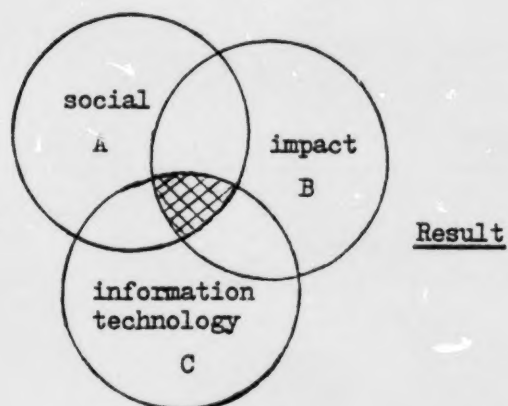
8 0 3AND6AND7



Problem 2: Social impact of information technology

Logic: 1. concepts: a. social
b. impact
c. information technology

2. Venn diagram:



Strategy:

? S impact; S social
9 4487 impact
10 38814 social

? SS information and technology
11 5359 information
12 4353 technology
13 274 11 and 12

? C 9and10and13
14 15 9and10and13

? C7AND23

24 0 7AND33

? T14/3/3

14/3/3

K6903-0 80K6903-0

CLIMBING DISCIPLINARY WALLS AND LEARNING HOW TO BORROW

SHERIF, CAROLYN WOOD

PENNSYLVANIA STATE U, UNIVERSITY PARK 16802

WOMEN'S STUDIES INTERNATIONAL QUARTERLY 1978, 1, 3, 219-224.

CODEN: WSIQD

? T14/3/4-5

14/3/4

K5794-0 80K5794-0

DEVELOPPEMENT TECHNOLOGIQUE ET TRANSFORMATION SOCIALE: L'INFORMATIQUE
DANS LES ENTREPRISES FRANCAISES TECHNOLOGICAL DEVELOPMENT AND SOCIAL
TRANSFORMATION: COMPUTERS IN FRENCH COMPANIES

BALLE, CATHERINE:

CENTRE NATIONAL RECHERCHE SCIENTIFIQUE, 75700 PARIS FRANCE

ANNEE SOCIOLOGIQUE .I. 1977, 28, 173-212. CODEN: ASLQA

14/3/5

J5699-0 78J5699-0

LA VIDA PSIQUICA DEL INDIVIDUO Y LAS RELACIONES CON SU ENTORNO SOCIAL
EN EL AÑO 2000 (THE PSYCHIC LIFE OF THE INDIVIDUAL AND RELATIONSHIPS
WITH HIS SOCIAL ENVIRONMENT IN THE YEAR 2000)

PINILLOS, JOSE LUIS

U MADRID, UNIVERSITY CITY SPAIN

REVISTA DE ESTUDIOS SOCIALES, 1971, 1, APR, 29-39. CODEN: RESO-D

Appendix III: Computer Searchable Files for SOCIOLOGY

	Database	Years Covered	No. of journals indexed	No. of items	Update	Thesaurus	Cost
Primary	Sociological Abstr.	1963-present	1,200	107,000	quarterly	yes	\$55.00/hr. \$00.15/cit.
	Social Science Citation Index	1972- "	3,200	1,015,000	monthly	no	\$75.00/hr. \$00.15/cit.
Secondary	U.S. Pol. Sci. Docum.	1975- "	120	15,750	irregularly	no	\$65.00/hr. \$00.15/cit.
	Psychological Abstr.	1967- "	900	349,000	monthly	yes	\$65.00/hr. \$00.10/cit.
	PAIS International	1976- "	1,200 & 8,000 other pub.	144,600	monthly	no	\$60.00/hr. \$00.15/cit.
	ERIC	1966- "		439,000	monthly	yes	\$25.00/hr. \$00.10/cit.
Inter-disciplinary	NTIS	1964- "	indexes govt. sponsored re- search reports	863,500	bi-weekly	yes	\$40.00/hr. \$00.10/cit.
	GPO Monthly Catalog	1976- "		109,800	monthly		\$35.00/hr. \$00.10/cit.
	Foundation Grants	1973- "		105,600	bi-monthly	no	\$60.00/hr. \$00.30/cit.
	Foundation Directory	current year		N.A.	bi-annual	no	\$60.00/hr. \$00.30/cit.
	National Foundation	" "		21,800	yearly	no	\$60.00/hr. \$00.30/cit.
	Comprehensive Dissertation Index	1861-present		756,300	monthly	no	\$55.00/hr. \$00.12/cit.
Popular	Magazine Index	1976- "	370 popular mag.	588,500	monthly	no	\$75.00/hr. \$00.20/cit.
	National Newsp. Ind.	1979- "		391,400	monthly	no	\$75.00/hr. \$00.20/cit.

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